

**REVIEW ARTICLE ON *CROTON TIGILIM* (UPVISHA) IN AGADA
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ABSTRACT

The term "*Upavisha*" refers to substances that are somewhat less strong than *visha* yet have similar properties. One of the *upavishas* and a well-known plant in the Indian system of medicine is called *Jaypal* (*Croton tiglium*), which is used as a component in a variety of formulations. Ayurvedic treatments have long employed the herb known as *jaypal* (*Croton tiglium*). According to ayurveda it treats *udara*, *shoola*, *kandu*, *kushtha*, *raktvikara*, *pleeha*, *ashmaree*, and *krumi*. Croton, a toxalbumin that is an irritant and vesicant, is the active ingredient in *croton tiglium*. Jamalgota, also known as Purging Croton, is the most potent laxative and has a stimulating effect on bowel movement. If you have severe constipation, your doctor may prescribe

a strong stimulant laxative. However, you should check for other possible reasons, particularly bowel blockage (also known as intestinal obstruction). This review article includes overall information about the plant *jaypal*, This review article deals with vernacular names, synonyms, classification, ayurvedic properties with pharmacological action of *Jaypal*, chemical constituents, Toxicological aspect, treatment medicolegal aspects in both Ayurveda and Modern toxicology.

KEYWORDS: Upavisha, jaypal, purging croton.

INTRODUCTION

An efficient and sophisticated antitoxic treatment approach is part of India's ancient medical system, *Ayurveda*. Toxicology management is covered by one of *Ayurveda*'s eight traditional disciplines, *Agadatantra*. *Agadatantra* discusses how to identify various types of *visha* and how to cure them. The three types of *visha* (manufactured poisons) are *sthavara*, *jangama*, and *kritrima visha*. In accordance with their levels of toxicity, *sthavara vishas* (inanimate poisons) are further divided into *mahavisha* and *upavishas*. In *Ayurveda*, *upavishas* are a class of medications with lower than average toxicity that, although not fatal, do have certain toxic side effects that may be managed with therapeutic procedures.

The leaves of *Croton tiglium*, commonly known as "*Jaypal*," are extremely caustic and act as a very strong purgative, giving the mouth and throat an excruciating burning sensation. Acharya *Yogratnakar* asserts that *Jaypal* is *guru*, *tikta*, and endowed with *Ushna* Guna. This characteristic causes it to behave like a *vantakar*. *Jwara* and *kushta* are treated by *Jaypal*. Like *rechak*, it behaves. *Kapha*, *kandu*, and *krumi* are reduced.^[1] According to *Bhavprakash Nighantu*, indications and symptoms like *Daha*, *Udarshool*, and *sarakta dravamal pravrutti* happen when *Jaypal* is used in excess.^[2]

The drug material consisting seeds must be used in therapeutics after proper purification (*Shodhana*) and with posological consideration. Sometimes its disuse, if any, may be avoided. In case of complications and toxic signs and symptoms, the countering measures should be taken up for treatment.

AIMS AND OBJECTIVES

Available *Ayurvedic* *samhitas*, various texts, journals and modern literature will be reviewed with special reference to *Jaypal* (*Croton tiglium*).

MATERIALS AND METHODS

Various *Ayurved* *samhitas* with their commentaries by different authors, web search, various textbooks and peer reviewed journals were studied to get more information about *Jaypal*.

VERNACULAR NAMES

Jaypal has been mentioned by different names in different regions. Below are given regional names according to region.

Latin: *Croton tiglium*

English: Kroton

Sanskrit: Jaypala, Danti, Jaipala

Hindi: Jamalgota

Bengali: Jaipal

Marathi: Jamalgota

Gujarati: Jepalo

Karnataki: Jepal

Malyalam: Dantibijam

Nepal: Lapchebis

Persian: Bedanjirekhatai, Dund

SYNONYMS: Rechaka (That which causes purgation), Beeja rechaka (seeds causes purgation), Jayapala (that which wins over diseases), Dantibeeja (seeds resemble that of danti), Maladravi (that which causes liquid defecation), Nikumba (globose fruit), Beeja rechaka (seed causes purgation), Kumbibeeja (pot shaped seed), Chitramoola (root resembles that of chitraka), Sheegra (fast acting drug), Tindideephala.^[3]

DESCRIPTION OF JAYPAL ACCORDING TO SAMHITAS

1. *Charaka Samhitaa*

- a) In first chapter of *Sutrasthana* i.e. *Dirghanjivitiyaadhyaya*, Jaypal mentioned as *Dravanti* in 16 *Mulini dravyas*.^[4]
- b) In the second chapter of *Sutrasthana* i.e. *Apamargatanduliyaadhyaya*, *Dravnti* is mentioned in *virechak dravyas*.^[5]
- c) In fourth chapter of *Sutrasthana* i.e. *Shadavirechanashatashriyayadhyaya*, Jaypal mentioned as *Dravanti*. And it is said that there are 48 yogas of *Danti & Dravanti*.^[6]
- d) Detailed description of these 48 yogas of *Danti & Drvanti* is in twelfth chapter of *Kalpasthanana* which is named as *Danti-Dravanti Kalpadhyaya*.^[7]
- e) References of *Dravanti* are also found in 7th & 8th chapter of *Vimana sthana* and in 7th, 13th, 27th, 33rd chapters of *chikitsa sthana*. In *Kalpa sthana*, *Dravanti* is described in 1st, 11th, and 12th chapters and in *Siddhi sthana* it is in 11th chapter.

2. *Sushruta Samhitaa*

- a) In 11th chapter of *Sutrasthana*, *Dravanti* is used as *Prativap* to prepare *Tikshna kshara*.^[8]
- b) *Jaypal* is included in *Adhobhagahara Gana* in 39th Chapter of *Sutrasthana*.^[9]

- c) In 42nd chapter of *Sutrasthana* i.e. *Rasavisheshvidnyaniyamadhyaya*, *Dravanti* comes under *Tikta Rasatmak Dravya*.^[10]
- d) In 44th chapter of *Sutrasthana* i.e. *Viechandavyavikalpa vidnyaniyamadhyaya* there is preparation of *Dantyadi Ghruta* which is useful in *Visarpa, Daha, Kaksha, Alaji*. *Dantyadi tailam* is useful in *Prameha, Gulma, Vata & Kaphajanya Malavarodha*.^[11]
- e) In 2nd chapter of *Chikitsasthana* i.e. *Sadyovrunachikitsitamadhyaya*, *Dravanti* is the main ingredient of *Shodhana tail*.^[12]
- f) In 18th chapter of *Chikitsasthana* i.e. *GrantiApachi-Arbuda-Gandachikitsitamadhyaya*, *Dravanti* is used in the preparation of *Ghruta* which is very useful in treatment of *Apachi*.^[13]
- g) In 31st chapter of *Chikitsasthana* i.e. *Snehopyougika chikitsitamadhyaya*, *Dravanti sneha* is described under *Virechana sneha*.^[14]

3. Ashtaanga Hridaya

- a. *Jaypal* is described as *Nikumbha* in 19th chapter of *Chikitsasthana* i.e. *Kushthachikitsitamadhyaya*. It is one of the main ingredients of *Mahavajraka Ghruta* which is used in the *Kushtha chikitsa*.^[15]
- b. In 30th chapter of *Uttarsthana*, *Dravanti* is one of the main ingredients of *Dantyadi Ghruta* which is useful in treatment of *Apachi*.

4. Shaarangadhara Samhita^[17]

In *Shaarangadhara Samhita*, there are many medicinal preparations in which *Jaypal* was used as key ingredient.

- a) *Narach Rasa*: *Jaypal* is the main ingredient and is used in *Aadhmana, Malavishtambha, Udavarta*.
- b) *Ichhabhedi Rasa*: *Jaypal* is the main content of the *Ichhabhedi rasa* which is used in *Vishtambha & Aadhmana*.

5. Yogaratnaakara

In *Upavisha Prakaranam*, *Jaypal* is described under *Upavisha*. In this, *Jaypal* is described as having properties like *Tikta* rasa and Guna like *Guru, Ushna, Sara*. It is useful in *Vruna, Kaphavikara, Krumivikara, Jwara, Kushtha*. With this, *Shodhana* process of *Jaypal* is also described in detail.^[18]

CLASSIFICATION: ACCORDING TO AYURVED SAMHITAS.^[19]

<i>Bhavaprakasha nighantu ,Dhanwantara Nighantu</i>	<i>Guduchyadi varia</i>
<i>Kaiyyadeva nighantu</i>	<i>Oushadi varia</i>
<i>RajaNighantu</i>	<i>Pippalyadi varia</i>
<i>Sharngadhara Samhita, Rasendra chudamani Rasa sara sangraha, Ayurveda prakasha Rasa Tarangini</i>	<i>Upavisha</i>

AYURVEDIC PHARMACODYNAMIC PROPERTIES

1. *Rasa - Katu*
2. *Veerya - Ushna*
3. *Vipaaka - Katu*
4. *Guna – Guru, Ruksha, Tikshna.*^[20]
5. *Prabhaava - No specific prabhaava*
6. *Karma (Action on Tridosha): Vaata- Vaataghna Kapha – Kaphaghna*

CHEMICAL CONSTITUENTS

- ❖ Active principle of croton tiglium is Croton, a toxalbumin, which is an irritant & vesicant.
- ❖ A less poisonous glycoside, crotonoside is also present.^[21]
- ❖ Crotonoside (glycoside), oil contain powerful vesicating resin composed of crotonoleic acid, methyl crotonic acid, and several other fatty acids.^[22]

TOXIC PART: Seed and oil extracted from the seed is extremely toxic. Seed oil is commented to have tumour promoting phorbol diesters.^[23]

MECHANISM OF ACTION

The toxalbumin present in the seeds is a toxic protien that disable ribosomes and thereby inhibit protien synthesis. It is antigenic in nature, it agglutinates red cells and causes hemolysis and cell destruction.^[24]

SIGNS AND SYMPTOMS^[25,26,27]**On ingestion**

There is hot burning pain from mouth to stomach, salivation, Nausea, vomitting, purging, and bloody stools with griping pain followed by tachycardia, vertigo, great prostration, circulatory and respiratory collapse and death.

Applied to skin: croton oil produces burning sensation, redness and vesication^[26]; the vesicles may later suppurate and cause scarring.

FATAL DOSE: 20 drops of oil/1-2 ml of oil or 4-5 seeds.^[28]

FATAL PERIOD: Death may occur in about 4 to 6 hours or may be delayed for 3 to 6 days.^[28]

POSTMORTEM FINDINGS

- ❖ The mucous membrane of the stomach and intestines is usually found red, inflamed and excoriated at places.
- ❖ Fragments of the seeds may be found in stomach and intestine.
- ❖ The spleen and liver gets congested.
- ❖ The kidneys may show cloudy swelling and congestion.
- ❖ Occasionally the post mortem findings are negative.

MEDICOLEGAL IMPORTANCE^[29]

- ❖ Accidental poisoning results from swallowing croton oil by mistake, or when taken in large doses as a purgative or by inhaling their dust
- ❖ Suicide and Homicide is rare
- ❖ Root and oil are taken internally as an abortifacient.
- ❖ Oil is used as arrow poison.

TREATMENT^[29]

As per modern

- ❖ Stomach wash
- ❖ Administration of demulscent drinks, like milk, or egg white
- ❖ Morphine with atropine to allay pain and reduce intestinal secretions.
- ❖ Glucose and saline re given IV to compact collapse and dehydration.
- ❖ Borax is an antidote of croton seed poisoning.

As per *Ayurveda*

According to *Anupanamanjari* and *Rasajalanidhi Dhanyaka* (coriander seeds), pestled with curd and sugar removes troubles due to croton seeds.

In *Kodasseri marga*, a traditional malayalam textbook it has been explained that ingestion of *Jayapal* seeds result in acute diarrhoea and vomiting and for that 16g (4 kazhanju) lavanga and 8g (2 kazhanju) sundi and musta is made to kahayam and when cooled is given with honey, which is considered as the best medicine for jayapala poisoning.

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